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IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz

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For: **METHOD AND APPARATUS TO  
CONTROL LOADED ISOTOPIC FUEL  
WITHIN A MATERIAL**

previously "Systems To Control Nuclear Fusion  
of Isotopic Fuel Within A Material"

This is a Continuation of Serial no. 07/ 760,970

Filed: 09/17/1991

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**ABSTRACT OF THE DISCLOSURE**

The present invention to control loaded isotopic fuel within a material uses a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal. In one configuration means are provided to minimize the degradation of the loaded material. The apparatus includes a novel cathode, novel anode, and heat pipes, to improve reaction rates. The apparatus includes means to extract products. The apparatus includes intraelectrode barriers to obstruct the movement of the isotopic fuel. The apparatus includes thermal and electrical busses, and enables integration of smaller units into larger assemblies.